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**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

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| In re Patent Application of | : | |
| ALBERTO GINESI et al. | : | Examiner: John J. Lee |
| Serial No.: 09/919,574 | : | Group Art Unit: 2684 |
| Filed: July 30, 2001 | : | |

For: APPARATUS AND METHOD OF LOOP AND RATE DEPENDENT POWER CUTBACK

# APPEAL BRIEF

James J. Merek
Attorney for Appellants

MEREK, BLACKMON & VOORHEES, LLC
673 South Washington Street
Alexandria, Virginia 22314
(703) 684-5633

## I. REAL PARTY IN INTEREST

The real party in interest is Ciena Corporation, the assignee of record of the subject patent application.

## II. RELATED APPEALS AND INTERFERENCES

Appellants are unaware of any prior or pending appeals, judicial proceedings or interferences which may be related to, directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

## III. STATUS OF CLAIMS

Claims 1 through 31 are currently pending and have been finally rejected. Appellants hereby appeal the rejections of Claims 1 through 31.

## IV. STATUS OF AMENDMENTS

No amendment was filed in the subject patent application subsequent to issuance of the Final Rejection on January 13, 2006.

## V. SUMMARY OF CLAIMED SUBJECT MATTER

Appellants' invention, as recited in Claim 1, is a method of reducing power required for transmitting a signal from a first transceiver to a second transceiver, (See Specification, p. 3, lines 16 to 18) comprising the acts of: estimating at the first transceiver an excess amount of power used by the first transceiver for transmitting the signal (See Figure 2a, reference numeral 102, Specification, p. 3, lines 18 and 19), *wherein the excess amount of power for the signal is based at least in part on a value obtained during initialization* (See Specification, p. 7, line 29 to p. 8, line 6); reducing a power use of the first transceiver by the excess amount of power to a reduced power level (See Figure 2a, reference numeral 104, Specification, p. 3, lines 19 and 20); and transmitting the signal from the first transceiver using the reduced power level, wherein the reduced power level achieves a transmission rate of the signal within a predefined tolerance of a target rate thereof (See Figure 2a, reference numeral 106, Specification, p. 3, lines 20 to 22).

Appellants' invention, as recited in Claim 13, is a method of reducing power required for transmitting a signal from a first transceiver to a second transceiver (See Specification, p. 3, lines 16 to 18), comprising the steps of: determining at the second transceiver an amount of excess power in the signal transmitted from the first transceiver (See Figure 2b, reference numeral 110, Specification, p. 15, Claim 13, lines 3 and 4); calculating at the second transceiver an attainable reduced power level for the transmitted signal (See Figure 2b, reference numeral 112, Specification, p. 15, Claim 13, lines 5 and 6); and communicating the reduced power level between the second and first transceivers, wherein the first transceiver adjusts its power level during a first

initialization and prior to a time period that would require a second initialization (See Figure 2b, reference numeral 114, Specification, p. 7, lines 20 to 21 and p. 15, Claim 13, lines 7 to 9).

Appellants' invention, as recited in Claim 15, is an apparatus for reducing power required for transmitting a signal from a central office asymmetric digital subscriber line (ADSL) termination unit (ATU-C) to a remote ADSL termination unit (ATU-R), wherein the ATU-C includes a processor for controlling the ATU-C to implement processing including the acts of (See Figure 3 and Specification, p. 15 and 16, Claim 15, lines 1 to 4): estimating an excess amount of power used by the ATU-C for transmitting the signal (See Figure 2a, reference numeral 102, Specification, p. 16, Claim 15, lines 5 and 6), *wherein the excess amount of power for the signal is based at least in part on a value obtained during initialization* (See Specification, p. 7, line 29 to p. 8, line 6); reducing a power use of the ATU-C by the excess amount of power to a reduced power level (See Figure 2a, reference numeral 104, Specification, p. 16, Claim 15, lines 7 and 8); and transmitting the signal from the ATU-C using the reduced power level, wherein the reduced power level achieves a transmission rate of the signal within a predefined tolerance of a target rate thereof (See Figure 2a, reference numeral 106, Specification, p. 16, Claim 15, lines 9 to 11).

Appellants' invention, as recited in Claim 26, is an apparatus for reducing power required for transmitting a signal from a central office asymmetric digital subscriber line (ADSL) termination unit (ATU-C) to a remote ADSL termination unit (ATU-R), wherein the ATU-R includes a processor for controlling the ATU-R to implement processing including the acts of (See Figure 3 and Specification, p. 17, Claim 26, lines 1 to 4):

determining an amount of excess power in the signal transmitted from the ATU-C (See Figure 2b, reference numeral 110, Specification, p. 17, Claim 26, lines 5 and 6); calculating an attainable reduced power level for the transmitted signal (See Figure 2b, reference numeral 112, Specification, p. 17, Claim 26, line 7); and communicating the reduced power level to the ATU-C, wherein the ATU-C adjusts its power level during a first initialization and prior to a time period that would require a second initialization (See Figure 2b, reference numeral 114, Specification, p. 7, lines 20 to 21 and p. 17, Claim 26, lines 8 and 9).

Appellants' invention, as recited in Claim 31, is a method of reducing power required for transmitting a signal from a first transceiver to a second transceiver (See Specification, p. 3, lines 16 to 18), comprising the acts of: estimating an excess amount of power used by the first transceiver for transmitting the signal (See Figure 2a, reference numeral 102, Specification, p. 3, lines 18 and 19), *wherein the excess amount of power for the signal is estimated in accordance with a measured value of upstream attenuation* (See Specification, p. 6, lines 26 to 33 and p. 14, Claim 3); reducing a power use of the first transceiver by the excess amount of power to a reduced power level (See Figure 2a, reference numeral 104, Specification, p. 3, lines 19 and 20); and transmitting the signal from the first transceiver using the reduced power level, wherein the reduced power level achieves a transmission rate of the signal within a predefined tolerance of a target rate thereof (See Figure 2a, reference numeral 106, Specification, p. 3, lines 20 to 22).

## VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

The following grounds of rejection are to be reviewed in the subject appeal:

Whether Claims 1 to 31 are obvious under 35 U.S.C. § 103 from the combination of Brown et al. (i.e. U.S. Patent No. 6,226,356) and Payne et al. (i.e., US 2001/0031048).

## VII. ARGUMENT

The sole rejection of Claims 1 to 31 (the only pending claims) is under 35 U.S.C. § 103 based on the combination of Brown et al. and Payne et al. Appellants respectfully submit that none of Claims 1 to 31 are rendered obvious under the governing legal standards for an obviousness rejection set forth below.

Because the necessary teaching, suggestion or motivation to combine Brown et al. and Payne et al. is lacking, the rejection of Claims 1 to 31 is legally erroneous. Further, even if the unobvious combination of Brown et al. and Payne et al. is made, Appellants' invention is still not rendered obvious. As such, the rejection of Claims 1 to 31 cannot be sustained.

### A. LEGAL STANDARDS FOR AN OBVIOUSNESS REJECTION

"Determination of obviousness under 35 U.S.C. § 103 is a legal conclusion based on underlying facts." *In re Kumar*, 2005 U.S. App. LEXIS 17215, *8 (Fed. Cir. 2005). "During examination, *the examiner bears the initial burden of establishing a prima facie case of obviousness*...The prima facie case is a procedural tool, and requires the examiner *to initially produce evidence to support a ruling of obviousness. Id.* (emphasis added)

The invention must be considered as a whole without the benefit of hindsight, and the claims must be considered in their entirety. Rockwell International Corp. v. United States, 147 3 F.3d 1358, 1364 (Fed. Cir. 1998)

"One cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention." In re Fine, 837 F.2d 1071, 5 USPQ 2d 1596, 1600 (Fed. Cir. 1988). It is impermissible to use the claimed invention as a blueprint from which to reconstruct the prior art to satisfy the claimed invention.

Interconnect Planning Corp. v. Feil, 774 F.2d 1132, 227 USPQ 543, 548 (Fed. Cir. 1985) ("From its discussion of the prior art it appears to us that the court, guided by the defendants, treated each reference as teaching *one* or more of the specific components for use in the Feil system, although the Feil system did not then exist. Thus the court reconstructed the Feil system, using the blueprint of the Feil claims. As is well established, this is legal error.")

*There must be a suggestion or motivation in the prior art to modify a reference* to satisfy the claimed invention. In re Gordon, 221 USPQ 1125, 1127 (Fed. Cir. 1984). "*The mere fact that the prior art could be so modified would not have made the modification obvious unless the prior art suggested the desirability of the modification.*" *Id.* (emphasis added)

It is impermissible to use the inventor's own work to find the necessary motivation or suggestion to modify a reference to satisfy the claimed invention. *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 220 USPQ 303, 312-313 (Fed. Cir. 1983)('To imbue one of ordinary skill in the art with knowledge of the invention in suit, when no prior art reference or references of record convey or suggest that knowledge, is to fall victim to the insidious effect of hindsight syndrome wherein that which only the inventor taught is used against the teacher.")

"When an obviousness determination is based on multiple references, there must be a showing of some 'teaching, suggestion, or reason' to combine the references...Although a reference need not expressly teach that the disclosure contained therein should be combined with another...the showing of combinability, in whatever form, must be '*clear and particular.*'" Winner International Royalty Corp. v. Wang, 202

F.3d 1340, 1348-1349 (Fed. Cir. 2000) (emphasis added). Hence, *there must be a clear and particular showing of the combinability of two or more references.*

"'The factual inquiry whether to combine references must be thorough and searching'...*It must be based on objective evidence of record.* This precedent has been reinforced in myriad decisions and cannot be dispensed with...The need for specificity pervades this authority...This factual question of motivation is material to patentability, and could not be resolved on subjective belief and unknown authority...'*Common knowledge and common sense,' even if assumed to derive from the agency's expertise, do not substitute for authority when the law requires authority.*" In re Lee, 277 F.3d 1338, 1343-1345 (Fed. Cir. 2002)(emphasis added)

The prior art must be considered as a whole and suggest the desirability and thus the obviousness of making the combination. Lindermann Maschinefabrik Gmbh v. American Hoistand Derrick Co., 730 F.2d 1452, 1462, 221 USPQ 481, 488 (Fed. Cir. 1984)

*"There is no suggestion to combine, however, if a reference teaches away from its combination with another source."* Tech Air, Inc., 192 F.3d at 1360 (emphasis added). See also Winner International Royalty Corp., 202 F.3d at 1349-1350 ("Second, if Johnson did in fact teach away from Moore, then that finding alone can defeat Wang's obviousness claim.")

"A reference may be said to teach away when a person of ordinary skill, upon reading the reference would be discouraged from following the path set *out* in the reference, *or* would be led in a direction divergent from the path taken by the applicant... [ *or*] if it suggests that the line of development flowing from the reference's disclosure is

unlikely to be productive of the result sought by applicant." In re Gurley, 27 F. 3d 551, 553, 31 USPQ 2d 1130, 1131 (Fed. Cir. 1994) and Tech Air, Inc. v. Denso Mfg. Michigan Inc., 192 F.3d 1353, 1360 (Fed. Cir. 1999).

## B. THE REJECTIONS OF CLAIMS 1 TO 31 ARE ERRONEOUS

### 1. Claim 1 is not rendered obvious by the combination of Brown et al. and Payne et al.

Regarding Claim 1, Appellant's invention is directed to a method of reducing power required for transmitting a signal from a first transceiver to a second transceiver. The method includes the steps of: estimating at the first transceiver *an excess amount of power* used by the first transceiver for transmitting the signal, *wherein the excess amount of power for the signal is based at least in part on a value obtained during initialization*; reducing a power use of the first transceiver by the excess amount of power to a reduced power level; and transmitting the signal from the first transceiver using the reduced power level, wherein the reduced power level achieves a transmission rate of the signal within a predefined tolerance of a target rate thereof.

Brown et al. does not teach or suggest, *inter alia*, estimating at a first transceiver *an excess amount of power* used by the first transceiver for transmitting the signal. Rather, Brown et al. merely determines *the transmission power* needed to transmit a signal. The following passages in Brown et al. make this abundantly clear:

> The method includes determining characteristics of the line, *determining transmission power need to transmit the signal in response to the characteristics of the line*, and transmitting the signal on the line in response to determining the transmission power. (See Brown et al., col. 2, lines 56 to 58)(emphasis added)

> At block 220, based on the characteristics of the subscriber line 115, the control logic 125 *determines the transmission power required* by the driver 120 to drive a signal onto subscriber line 115. (See Brown et al., col. 4, lines 37 to 40)(emphasis added)
>
> At block 260, based on the length of the subscriber line 115, the control logic 125 *determines the transmission power required* by the driver 120 to drive a signal onto subscriber line 115. (See Brown et al., col. 4, lines 59 to 63)(emphasis added)
>
> Next, at the block 260, the control logic 125 *determines the amount of transmission power* required by the driver 120 to drive a signal onto the subscriber line 115. (See Brown et al., col. 5, lines 30 to 32)(emphasis added)

In asserting that Brown et al. does estimate excess power, the Examiner cites to Figures 2a and 2b of Brown et al. as well as the passage at col. 4, line 29 to col. 5, line 39. Figure 2a includes block 220 clearly stating that the method disclosed in Brown et al. merely determines transmission power. Similarly, block 260 in Figure 2b states that Brown et al. merely determines transmission power. In the passage at col. 4, line 29 to col. 5, line 39, Brown et al. repeatedly states that it merely determines transmission power. Accordingly, there is simply no basis for the Examiner to argue that Brown et al. discloses this aspect of Appellants' invention. Further, the secondary reference (i.e., Payne et al.) does not teach or suggest this feature. In this regard, Appellants note that the Examiner does not contend that Payne et al. discloses the step of estimating the excess amount of power used by the first transceiver for transmitting a signal. Payne et al. merely detect the power of the signal to prevent overloading of amplifier 206. (See Payne et al., paragraph 24) For this reason alone, Claim 1 is patentable over the Examiner's proposed combination.

Brown et al. further fails to teach or suggest the claim limitation "*wherein the excess amount of power for the signal is based at least in part on a value obtained during*

*initialization.*" In fact, Brown et al. does not even mention initialization in any portion of the patent. Further, nothing in Brown et al. suggests that an estimate of excess power of a transceiver be based in part on a value obtained during initialization.

On pages three and four of the Official Action dated January 13, 2006, the Examiner states:

> Brown does not exactly disclose the limitation 'detecting power of the signal received during an initialization sequence'. However, Payne discloses the limitation 'detecting power of the signal received during an initialization sequence' (pages 3, lines 19-27, fig. 3, pages 2, paragraphs 20 – pages 3, paragraphs 24, where teaches detecting power of the signal received during an initialization sequence, and adjusting the transmission power (increase or decrease power) based on estimating the received power).

Appellants point out that the appealed claims do not include the limitation "detecting power signal received during an initialization sequence" Rather, Claim 1 and the claims that depend therefrom recite "estimating at said first transceiver an excess amount of power used by said first transceiver for transmitting said signal, wherein said excess amount of power for said signal is based in part on a value obtained during initialization." Payne et al. does not teach or suggest this feature. As previously explained, Payne et al. does not estimate the excess amount of power of a first transceiver for transmitting a signal. Rather, Payne et al. merely detects the power of a signal to protect amplifier 206 in element 104 located at the customer's premises. Notably, it is element 104 that reduces the power of the signal transmitted by element 106 to prevent amplifier 206 from being overloaded. The power transmitted by element 106 is not reduced in any way. Moreover, Payne et al. does not teach or suggest the step of estimating excess power wherein the excess amount of power for the signal is based at least in part on a value obtained during initialization. All Payne et al. states is that the power of the received

signal may be detected during initialization. This teaching taken alone or in combination with Brown et al. does not render obvious Appellants' invention, as recited in Claim 1.

The Examiner's proposed combination does not render obvious Appellants' invention as set forth in Claim 1 as the proposed combination does not teach or suggest each and every element of Appellants' invention. Further, there is simply no evidence in this record supporting the combination of Brown et al. and Payne et al. More specifically, the record lacks clear and particular evidence of the combinability of Brown et al. and Payne et al. Payne et al. is not even remotely related to Brown et al. Brown et al. seeks to avoid unnecessarily high-powered transmissions by DSL drivers located at the central office. (See Brown et al., col. 2, lines 24 to 41) Payne et al., on the other hand, merely wants to prevent overload of an amplifier located in an element at the customer's premises. The system of Payne et al. is at direct odds with that of Brown et al. as the power of the driver at the central office in Payne et al. remains the same. Accordingly, Appellants respectfully submit that the proposed combination can only be made through the use of impermissible hindsight reconstruction.

**2. Claims 2 is not rendered obvious by Brown et al. and Payne et al.**

Claim 2 recites that "said first transceiver is located at one of a central office and a remote loop carrier, and comprises a downstream transmitter and an upstream receiver, and wherein said second transceiver is located at an end user location and comprises an upstream transmitter and a downstream receiver."

Payne et al. expressly teaches away from Appellants' invention as recited in Claim 2. As such, the combination is impermissible as a matter of law. Specifically, Claim 2 requires that the transmitter that transmits the reduced power be located in the

central office or a remote loop carrier. Payne et al. requires that the transmitter that transmits a signal at a reduced power be located at the customer's premises in order to reduce the peak amplitudes of the upstream signal below that of the nonlinear region of the off-hook telephone circuitry. (See Payne et al., paragraphs 3 and 19) Payne et al. further requires that the central office transmitter transmit at a constant power. These teachings are at direct odds and, therefore, the combination simply cannot be made.

The proposed combination, when objectively analyzed, simply does not teach or suggest Appellants' invention as set forth in Claim 2.

**3. Claim 3 is not rendered obvious in view of Brown et al. and Payne et al.**

Claim 3 requires that "said excess amount of power for the signal is estimated in accordance with a *measured value of upstream attenuation.*" (emphasis added) Brown et al. measures line characteristics to determine the necessary power (not excess power) to be transmitted. The only three line characteristics mentioned by Brown et al. are capacitance, impedance and inductance. (See Brown, col. 4, lines 19 to 25) Nowhere does Brown et al. teach or suggest the claimed feature that the excess amount of power for the signal is estimated in accordance with the *measured value of upstream attenuation*. The Examiner cites to col. 8, lines 11 to 52, Figs. 2 and 6 and col. 4, line 29 to col. 5, line 39 allegedly in support of the rejection of Claim 3. None of these passages disclose an excess amount of power for the signal estimated in accordance with the measured *value of upstream attenuation*. The look up tables and mathematical equations referred to in Brown et al. and relied upon by the Examiner do not in any way utilize upstream attenuation to estimate an excess amount of transmission power. In this regard, Appellants note that Brown et al. merely states that the look-up table could include

information that equates a particular *impedance* to the amount of transmission power needed. (See Brown, col. 4, lines 37 to 46) Payne et al. does not supply any of the aforementioned deficiencies of Brown et al.

**4. Claim 4 is not rendered obvious in view of Brown et al. and Payne et al.**

Claim 4 depends from Claim 3 and further requires that "said measured value of upstream attenuation is calculated as a difference between a total transmit power transmitted from said upstream transmitter and a measured power of an upstream signal received at said upstream receiver." Brown et al. and Payne et al. fail to teach or suggest Appellants' invention as recited in Claim 4. Neither reference refers to a measured value of upstream attenuation let alone the specific measured value recited in Claim 4.

**5. Claim 5 is not rendered obvious in view of Brown et al. and Payne et al.**

Claim 5 depends from Claim 4 and further recites "a value of said excess amount of power of said signal is associated with a value of said upstream attenuation in a table." As previously explained, neither Brown et al. nor Payne et al. teach or suggest determining the excess amount of power of the signal. Accordingly, there is absolutely no teaching or suggestion in either of these references of associating the value of excess amount of power of the signal with a value of upstream attenuation in a table. The Examiner cites to col. 4, line 29 to col. 5, line 24 and Figure 2 of Brown et al. to allegedly support the rejection of Claim 5. These portions of Brown et al. at most teach obtaining the amount of transmission power required to drive a signal (not the excess amount of power) from a look up table equating impedance, capacitance or inductance to the amount of power required to drive a signal.

**6. Claim 6 is not rendered obvious in view of Brown et al. and Payne et al.**

Claim 6 depends from Claim 2 and recites that "said first transceiver estimates a per carrier signal-to-noise ratio (SNR) in accordance with bit-per-carrier, power-per-carrier, and SNR margin information received from said second transceiver." Appellants' invention, as recited in Claim 6, is not rendered obvious by the proposed combination. The embodiment referenced by the Examiner in Brown et al. in connection with Claim 6 deals with regulating the sampling rate of the D/A converter 515 and the A/D converter 540 based on the subscriber line characteristics. This embodiment has nothing to do with the claimed invention in which the power of a first transceiver is reduced by an estimated excess amount of power for transmitting a signal. The only reference in the cited passage of Brown et al. to signal-to-noise ratio is that the length of the subscriber line 115 is an indication of SNR of the subscriber line 115. Nowhere do any of the references relied upon by the Examiner teach or suggest a first transceiver that estimates a per carrier signal-to-noise ratio (SNR) in accordance with bit-per-carrier, power-per-carrier, and SNR margin information received from a second transceiver.

**7. Claim 7 is not rendered obvious in view of Brown et al. and Payne et al.**

Claim 7 depends from Claim 6 and further recites that "said first transceiver uses said bit per carrier information for estimating a rate of said signal and a rate of said signal transmitted at a selected reduced power level, for ensuring said transmission rate is maintained within said predefined tolerance." Neither Brown et al. nor Payne et al. teach or suggest Appellants' invention. The passages cited by the Examiner simply do not teach or suggest the features alleged by the Examiner.

**8. Claim 8 is not rendered obvious in view of Brown et al. and Payne et al.**

Claim 8 depends from Claim 7 and recites "a second initialization is required for transmitting said signal at a reduced power level." The Examiner only cites to Brown et al. in connection with the added features of Claim 8. Brown et al. never mentions initialization let alone that a second initialization is required for transmitting the signal at a reduced power level. While Payne et al. does state that the power of the received signal may be detected during initialization, it does not teach or suggest Appellants' invention as recited in Claim 8.

**9. Claim 9 is not rendered obvious in view of Brown et al. and Payne et al.**

Claim 9 depends from Claim 2 and recites that "said first transceiver reduces said power in accordance with an excess SNR provided by said second transceiver." The Examiner cites only to Brown et al. for the additional features of Claim 9. Col. 8, line 28 to col. 9, line 20 and Figure 7 of Brown et al. refer to regulating the sampling rate of the D/A converter 515 and the A/D converter 540. This embodiment has nothing to do with the claimed invention. Figure 6 and the corresponding description of Brown et al. do not even mention SNR let alone a first transceiver reducing the power in accordance with an excess SNR provided by a second transceiver. Col. 5, line 60 to col. 6, line 19 of Brown et al. does not teach or suggest a first transceiver reducing power in accordance with an excess SNR provided by a second transceiver. More specifically, this section only refers to an "adequate signal-to-noise ratio." Nowhere does this passage even refer to "an excess SNR" let alone the other aspects of Claim 9.

**10. Claim 10 is not rendered obvious in view of Brown et al. and Payne et al.**

Claim 10 depends from Claim 9 and further recites "a second initialization is required for transmitting said signal at a reduced power level." The Examiner only cites to Brown et al. in connection with the added features of Claim 10. Brown et al. never mentions initialization let alone that a second initialization is required for transmitting the signal at a reduced power level. While Payne et al. does state that the power of the received signal may be detected during initialization, it does not teach or suggest Appellants' invention as recited in Claim 10.

**11. Claim 11 is not rendered obvious in view of Brown et al. and Payne et al.**

Claim 11 depends from Claim 2 and further recites that "said excess amount of power is estimated by estimating an excess amount of SNR at said second receiver for said target rate." The Examiner relies only upon Brown et al. for the added features of Claim 11. As previously explained, Brown et al. does not teach or suggest estimating an excess amount of power. As such, Claim 11 is not rendered obvious by the Examiner's proposed combination. Further, the passages of Brown et al. cited by the Examiner regarding SNR do not teach or suggest estimating an excess amount of power by estimating an excess amount of SNR at the second receiver for the target rate.

**12. Claim 12 is not rendered obvious in view of Brown et al. and Payne et al.**

Claim 12 depends from claim 2 and further recites "said first transceiver provides said second transceiver with a minimum SNR inflated by a value N corresponding to said excess amount of power, and wherein said first transceiver transmits at a power level reduced by said value N if said second transceiver is capable of supporting said minimum SNR inflated by said value N."

Once again, the Examiner cites only to Brown et al. for the added features of Claim 12. *Brown et al. does not determine excess amount of power.* Accordingly, Brown et al. clearly does not teach or suggest a first transceiver that provides a second transceiver with a minimum SNR inflated by a value N corresponding to the excess amount of power and wherein the first transceiver transmits at a power level reduced by the value N if the second transceiver is capable of supporting the minimum SNR inflated by the value N.

**13. Claim 13 is not rendered obvious in view of Brown et al. and Payne et al.**

Appellants' invention, as recited in Claim 13, is directed to a method of reducing power required for transmitting a signal from a first transceiver to a second transceiver. The method includes the steps of: determining at the second transceiver an amount of excess power in the signal transmitted from the first transceiver; calculating at the second transceiver an attainable reduced power level for the transmitted signal; and communicating the reduced power level between the second and first transceivers, *wherein the first transceiver adjusts its power level during a first initialization and prior to a time period that would require a second initialization.*

Brown et al. and Payne et al. both fail to teach or suggest, *inter alia*, determining the excess amount of power in the signal transmitted from the first transmitter. As previously explained in connection with Claim 1, Brown et al. merely determines the transmission power and Payne et al. merely detects the power of the recevied signal to prevent overloading of amplifier 206.

Brown et al. also does not teach or suggest adjusting the power level during a first initialization and prior to a time period that would require a second initialization. The

only reference to the time for performing the methods recited in Brown et al. is contained in the passage below:

> It is envisioned that the methods of FIGS. 2a and 2b can be implemented manually, or through an automated procedure that implements the methods of FIGS. 2a and 2b on a periodic basis. For example, the test measurement circuit 335 may measure the subscriber line 115 characteristics on a daily basis and then forwards the information to the control logic 125 via the GCI port 490. Thus, it would be possible for the control logic 125 to adjust the transmission power of the driver 120 on a daily basis. (See col. 7, lines 27 to 35)

Nowhere does the above passage refer to initialization or require adjusting the power level during initialization and prior to a time that would require a second initialization. Accordingly, Claim 13 patentably defines over the prior art including Brown et al.

Payne et al. merely states that the "power of the received signal may be detected during initialization process..." Nowhere does Payne et al. teach or suggest communicating the reduced power level between the second and first transceivers wherein the first transceiver adjusts its power level during a first initialization and prior to a time period that would require a second initialization..

Accordingly, Claim 13 is patentable.

**14. Claim 14 is not rendered obvious in view of Brown et al. and Payne et al.**

Claim 14 depends from Claim 13 and further recites "said second transceiver indicates a power cutback implicitly by reducing power-per-carrier information communicated to said first transceiver." The Examiner relies solely upon Brown et al. for the added features of Claim 14. However, the Examiner has failed to cite any portion of Brown et al. that allegedly teaches the features set forth in Claim 14. Accordingly, the Examiner has clearly not met his burden of establishing a prima facie case of unpatentability.

**15. Claim 15 is not rendered obvious in view of Brown et al. and Payne et al.**

Appellants' invention, as recited in Claim 15, is directed to an apparatus for reducing power required for transmitting a signal from a central office asymmetric digital subscriber line (ADSL) termination unit (ATU-C) to a remote ADSL termination unit (ATU-R), wherein the ATU-C includes a processor for controlling the ATU-C to implement processing including the acts of: estimating an excess amount of power used by the ATU-C for transmitting the signal, *wherein the excess amount of power for the signal is based at least in part on a value obtained during initialization*; reducing a power use of the ATU-C by the excess amount of power to a reduced power level; and transmitting the signal from the ATU-C using the reduced power level, wherein the reduced power level achieves a transmission rate of the signal within a predefined tolerance of a target rate thereof.

Neither Brown et al. nor Payne et al. teach or suggest, *inter alia*, estimating an excess amount of power used by the ATU-C for transmitting the signal as previously explained at length. For this reason alone, Appellants' invention as set forth in Claim 15 is patentable.

Brown et al. and Payne et al. both fail to teach or suggest the claim limitation *"wherein said excess amount of power for said signal is based at least in part on a value obtained during initialization."* Brown et al. does not mention initialization anywhere. Payne et al. merely states that the power of the received signal may be detected during initialization. (See Payne et al., paragraph 24)

As previously explained there is no teaching or suggestion to combine Brown et al. and Payne et al. Further, Payne et al. expressly teaches away from the claimed invention and its combination with Brown et al. Specifically, Payne et al. expressly teaches maintaining the transmission power of the ATU-C constant. Payne et al. expressly teaches providing the ATU-R with a gain circuit so that the transmission power of ATU-C can remain constant and if necessary reduced in the ATU-R to prevent amplifier 206 from being overloaded.

For at least the above reasons, Claim 15 is patenable.

**16. Claim 16 is not rendered obvious in view of Brown et al. and Payne et al.**

Claim 16 depends from Claim 15 and further recites "said excess amount of power for said signal is estimated in accordance with a measured value of upstream attenuation." As explained in connection with Claim 3, the Examiner's proposed combination does not render obvious Appellants' invention as recited in Claim 16.

**17. Claim 17 is not rendered obvious in view of Brown et al. and Payne et al.**

Claim 17 depends from Claim 16 and further recites "said measured value of upstream attenuation is calculated as a difference between a total transmit power transmitted from said ATU-C and a measured power of an upstream signal received at said ATU-C."

Neither reference relied upon by the Examiner in his rejection refers to a measured value of upstream attenuation let alone the specific measured value recited in Claim 4. Hence, Claim 17 is clearly patentable.

**18. Claim 18 is not rendered obvious in view of Brown et al. and Payne et al.**

Claim 18 depends from Claim 17 and further recites "a value of said excess amount of power of said signal is associated with a value of said upstream attenuation in a table."

Brown et al. and Payne et al. fail to teach or suggest determining the excess amount of power of the signal. Accordingly, there is absolutely no teaching or suggestion in either of these references of associating the value of excess amount of power of the signal with a value of upstream attenuation in a table. The Examiner's reliance on col. 4, line 29 to col. 5, line 24 and Figure 2 of Brown et al. is misplaced. These portions of Brown et al. at most teach obtaining the amount of transmission power required to drive a signal (not the excess amount of power) from a look up table equating impedance, capacitance or inductance to the amount of power required to drive a signal.

**19. Claim 19 is not rendered obvious in view of Brown et al. and Payne et al.**

Claim 19 depends from Claim 15 and further recites "said ATU-C estimates a per carrier signal-to-noise ratio (SNR) in accordance with bit-per-carrier, power-per-carrier, and SNR margin information received from said ATU-R."

The embodiment referenced by the Examiner in Brown et al. in connection with both Claim 6 and Claim 19 deals with regulating the sampling rate of the D/A converter 515 and the A/D converter 540 based on the subscriber line characteristics. This embodiment has nothing to do with the claimed invention in which the power of a ATU-C is reduced by an estimated excess amount of power for transmitting a signal. The only reference in the cited passage of Brown et al. to signal-to-noise ratio is that the length of the subscriber line 115 is an indication of SNR of the subscriber line 115. Nowhere do any of the references relied upon by the Examiner teach of suggest an ATU-C that

estimates a per carrier signal-to-noise ratio (SNR) in accordance with bit-per-carrier, power-per-carrier, and SNR margin information received from a second transceiver.

**20. Claim 20 is not rendered obvious in view of Brown et al. and Payne et al.**

Claim 20 depends from Claim 19 and further recites "said ATU-C uses said bit per carrier information for estimating a rate of said signal and a rate of said signal transmitted at a selected reduced power level, for ensuring said transmission rate is maintained within said predefined tolerance."

The added limitations of Claim 20 are simply not taught or suggested by the Examiner's proposed combination.

**21. Claim 21 is not rendered obvious in view of Brown et al. and Payne et al.**

Claim 21 depends from Claim 20 and further recites "a second initialization is required for transmitting said signal at said reduced power level."

Brown et al. does not even refer to initialization. Payne et al., while referring to initialization in the context of detecting the power of the received signal, does not teach or suggest requiring a second initialization for transmitting the signal at the reduced power level. *Notably, Payne et al. does not teach an ATU-C that transmist any signal at a reduced power.*

Claim 21 patentably defines over the prior art of record.

**22. Claim 22 is not rendered obvious in view of Brown et al. and Payne et al.**

Claim 22 depends from Claim 15 and further recites "said ATU-C reduces said power in accordance with an excess SNR provided by said ATU-R."

Payne et al. does not reduce the power of the ATU-C and hence clearly does not teach or suggest Appellants' invention as set forth in Claim 22. Further, nowhere does Brown et al. teach or suggest reducing the power of the ATU-C in accordance with an excess SNR provided by the ATU-R. As such, Claim 22 is patentable.

**23. Claim 23 is not rendered obvious in view of Brown et al. and Payne et al.**

Claim 23 depends from Claim 22 and further recites "a second initialization is required for transmitting said signal at said reduced power level."

Brown et al. does not even refer to initialization. Payne et al., while referring to initialization in the context of detecting the power of the received signal, does not teach or suggest requiring a second initialization for transmitting the signal at the reduced power level. *Notably, Payne et al. does not teach an ATU-C that transmits any signal at a reduced power.*

Claim 23 patentably defines over the prior art of record.

**24. Claim 24 is not rendered obvious in view of Brown et al. and Payne et al.**

Claim 24 depends from Claim 15 and further recites "said excess amount of power is estimated by estimating an excess amount of SNR at said ATU-R for said target rate."

Brown et al. and Payne et al. both fail to teach or suggest estimating excess amount of power as previously explained. Hence, these references cannot possibly render obvious Claim 24.

**25. Claim 25 is not rendered obvious in view of Brown et al. and Payne et al.**

Claim 25 depends from Claim 15 and further recites "said ATU-C provides said ATU-R with a minimum SNR inflated by a value N corresponding to said excess amount

of power, and wherein said ATU-C transmits at a power level reduced by said value N if said ATU-R is capable of supporting said minimum SNR inflated by said value N."

As previously explained, there is no teaching in either of the references relied upon by the Examiner of estimating the excess amount of power. Further, there is absolutely no teaching in either of the references relied upon by the Examiner of an ATU-C that provides the ATU-R with a nimum SNR inflated by a value N corresponding to the excess amount of power.

For at least this reason, Claim 25 is patentable.

**26. Claim 26 is not rendered obvious in view of Brown et al. and Payne et al.**

Appellants' invention, as recited in Claim 26, is directed to an apparatus for reducing power required for transmitting a signal from a central office asymmetric digital subscriber line (ADSL) termination unit (ATU-C) to a remote ADSL termination unit (ATU-R), wherein the ATU-R includes a processor for controlling the ATU-R to implement processing including the acts of: determining an amount of excess power in the signal transmitted from the ATU-C; calculating an attainable reduced power level for the transmitted signal; and communicating the reduced power level to the ATU-C, *wherein the ATU-C adjusts its power level during a first initialization and prior to a time period that would require a second initialization.*

The proposed combination of Brown et al. and Payne et al. fail to teach the step of determining an amount of excess power in the signal transmitted from the ATU-C. Brown et al. merely determines the transmission power while Payne et al. merely detects the power of the received signal. Further, the proposed combination fails to teach or suggest communicating the reduced power level to the ATU-C, wherein the ATU-C

adjusts its power level during a first initialization and prior to a time period that would require a second initialization. Brown et al. does not even mention initialization let alone adjusting the power level of the ATU-C prior to a time a period that would require a second initialization. Payne et al. never adjusts the power of the ATU-C.

Claim 26 is patentable.

**27. Claim 27 is not rendered obvious in view of Brown et al. and Payne et al.**

Claim 27 depends from Claim 26 and further recites "said ATU-R indicates a power cutback implicitly by reducing power-per-carrier information communicated to said ATU-C."

The Examiner has not pointed to any portion of either of the references he relies upon that allegedly teaches or suggests the added limitations of Claim 27. Hence, a prima facie case of unpatentability has not been established.

**28. Claim 28 is not rendered obvious in view of Brown et al. and Payne et al.**

Claim 28 depends from Claim 1 and further recites "said transmitting step recited in Claim 1 is performed during initialization at a time before transmission of C-REVERB."

Neither of the references relied upon by the Examiner teach or suggest the added limitations of Claim 28.

**29. Claim 29 is not rendered obvious in view of Brown et al. and Payne et al.**

Claim 29 depends from Claim 13 and further recites "said ATU-C adjusts its power level during initialization at a time before transmission of C-REVERB."

Neither of the references relied upon by the Examiner teach or suggest the added limitations of Claim 29. Brown et al. never refers to initialization. Further, Payne et al.

never adjust the power level of the ATU-C.

**30. Claim 30 is not rendered obvious in view of Brown et al. and Payne et al.**

Claim 30 depends from Claim 26 and further recites "said ATU-C adjusts its power level during initialization at a time before transmission of C-REVERB."

Neither of the references relied upon by the Examiner teach or suggest the added limitations of Claim 30. Brown et al. never refers to initialization. Further, Payne et al. never adjust the power level of the ATU-C.

**31. Claim 31 is not rendered obvious in view of Brown et al. and Payne et al.**

Appellants' invention, as recited in Claim 31, is directed to a method of reducing power required for transmitting a signal from a first transceiver to a second transceiver. The method includes the steps of: estimating an excess amount of power used by the first transceiver for transmitting the signal, wherein the excess amount of power for the signal is estimated in accordance with a measured value of upstream attenuation; reducing a power use of the first transceiver by the excess amount of power to a reduced power level; and transmitting the signal from the first transceiver using the reduced power level, wherein the reduced power level achieves a transmission rate of the signal within a predefined tolerance of a target rate thereof.

Brown et al. and Payne et al. fail to teach or suggest the step of estimating an excess amount of power used by the first transceiver for transmitting the signal. Further, the proposed combination fails to teach or suggest the limitation of Claim 31 in which the excess amount of power for the signal is estimated in accordance with a measured value of upstream attenuation. Accordingly, Claim 31 patentably defines over the prior art.

**C. CONCLUSION**

When evaluated under the controlling legal standards, the Examiner's rejections of Claims 1 through 31 cannot be sustained. Hence, Appellants respectfully request that all grounds of rejection be reversed.

A check in the amount of $500.00 is attached hereto to satisfy the government fee for filing the subject appeal brief. It is believed that no additional fees are due. However, should that determination be incorrect, the Commissioner is hereby authorized to charge any deficiencies to Deposit Account No. 50-0562 and notify the undersigned in due course.

Date: 6/13/06

Respectfully submitted,

James J. Merek
Attorney for Appellants
Reg. No. 32,158

MEREK, BLACKMON & VOORHEES, LLC
673 South Washington Street
Alexandria, Virginia 22314
(703) 684-5633

## VIII. CLAIMS APPENDIX

1. A method of reducing power required for transmitting a signal from a first transceiver to a second transceiver, comprising the acts of:

estimating at said first transceiver an excess amount of power used by said first transceiver for transmitting said signal, wherein said excess amount of power for said signal is based at least in part on a value obtained during initialization;

reducing a power use of said first transceiver by said excess amount of power to a reduced power level; and

transmitting said signal from said first transceiver using said reduced power level, wherein said reduced power level achieves a transmission rate of said signal within a predefined tolerance of a target rate thereof.

2. The method of claim 1, wherein said first transceiver is located at one of a central office and a remote loop carrier, and comprises a downstream transmitter and an upstream receiver, and wherein said second transceiver is located at an end user location and comprises an upstream transmitter and a downstream receiver.

3. The method of claim 2, wherein said excess amount of power for said signal is estimated in accordance with a measured value of upstream attenuation.

4. The method of claim 3, wherein said measured value of upstream attenuation is calculated as a difference between a total transmit power transmitted from said upstream transmitter and a measured power of an upstream signal received at said upstream receiver.

5. The method of claim 4, wherein a value of said excess amount of power of said signal is associated with a value of said upstream attenuation in a table.

6. The method of claim 2, wherein said first transceiver estimates a per carrier signal-to-noise ratio (SNR) in accordance with bit-per-carrier, power-per-carrier, and SNR margin information received from said second transceiver.

7. The method of claim 6, wherein said first transceiver uses said bit per carrier information for estimating a rate of said signal and a rate of said signal transmitted at a selected reduced power level, for ensuring said transmission rate is maintained within said predefined tolerance.

8. The method of claim 7, wherein a second initialization is required for transmitting said signal at said reduced power level.

9. The method of claim 2, wherein said first transceiver reduces said power in accordance with an excess SNR provided by said second transceiver.

10. The method of claim 9, wherein a second initialization is required for transmitting said signal at said reduced power level.

11. The method of claim 2, wherein said excess amount of power is estimated by estimating an excess amount of SNR at said second transceiver for said target rate.

12. The method of claim 2, wherein said first transceiver provides said second transceiver with a minimum SNR inflated by a value N corresponding to said excess amount of power, and wherein said first transceiver transmits at a power level reduced by

said value N if said second transceiver is capable of supporting said minimum SNR inflated by said value N.

13. A method of reducing power required for transmitting a signal from a first transceiver to a second transceiver, comprising the steps of:

determining at said second transceiver an amount of excess power in said signal transmitted from said first transceiver;

calculating at said second transceiver an attainable reduced power level for said transmitted signal; and

communicating said reduced power level between said second and first transceivers, wherein said first transceiver adjusts its power level during a first initialization and prior to a time period that would require a second initialization.

14. The method of claim 13, wherein said second transceiver indicates a power cutback implicitly by reducing power-per-carrier information communicated to said first transceiver.

15. An apparatus for reducing power required for transmitting a signal from a central office asymmetric digital subscriber line (ADSL) termination unit (ATU-C) to a remote ADSL termination unit (ATU-R), wherein said ATU-C includes a processor for controlling said ATU-C to implement processing including the acts of:

estimating an excess amount of power used by said ATU-C for transmitting said signal, wherein said excess amount of power for said signal is based at least in part on a value obtained during initialization;

reducing a power use of said ATU-C by said excess amount of power to a reduced power level; and

transmitting said signal from said ATU-C using said reduced power level, wherein said reduced power level achieves a transmission rate of said signal within a predefined tolerance of a target rate thereof.

16. The apparatus of claim 15, wherein said excess amount of power for said signal is estimated in accordance with a measured value of upstream attenuation.

17. The apparatus of claim 16, wherein said measured value of upstream attenuation is calculated as a difference between a total transmit power transmitted from said ATU-C and a measured power of an upstream signal received at said ATU-C.

18. The apparatus of claim 17, wherein a value of said excess amount of power of said signal is associated with a value of said upstream attenuation in a table.

19. The apparatus of claim 15, wherein said ATU-C estimates a per carrier signal-to-noise ratio (SNR) in accordance with bit-per-carrier, power-per-carrier, and SNR margin information received from said ATU-R.

20. The apparatus of claim 19, wherein said ATU-C uses said bit per carrier information for estimating a rate of said signal and a rate of said signal transmitted at a selected reduced power level, for ensuring said transmission rate is maintained within said predefined tolerance.

21. The apparatus of claim 20, wherein a second initialization is required for transmitting said signal at said reduced power level.

22. The apparatus of claim 15, wherein said ATU-C reduces said power in accordance with an excess SNR provided by said ATU-R.

23. The apparatus of claim 22, wherein a second initialization is required for transmitting said signal at said reduced power level.

24. The apparatus of claim 15, wherein said excess amount of power is estimated by estimating an excess amount of SNR at said ATU-R for said target rate.

25. The apparatus of claim 15, wherein said ATU-C provides said ATU-R with a minimum SNR inflated by a value N corresponding to said excess amount of power, and wherein said ATU-C transmits at a power level reduced by said value N if said ATU-R is capable of supporting said minimum SNR inflated by said value N.

26. An apparatus for reducing power required for transmitting a signal from a central office asymmetric digital subscriber line (ADSL) termination unit (ATU-C) to a remote ADSL termination unit (ATU-R), wherein said ATU-R includes a processor for controlling said ATU-R to implement processing including the acts of:

determining an amount of excess power in said signal transmitted from said ATU-C;

calculating an attainable reduced power level for said transmitted signal; and

communicating said reduced power level to said ATU-C, wherein said ATU-C adjusts its power level during a first initialization and prior to a time period that would require a second initialization.

27. The apparatus of claim 26, wherein said ATU-R indicates a power cutback implicitly by reducing power-per-carrier information communicated to said ATU-C.

28. The method of Claim 1, wherein said transmitting step recited in Claim 1 is performed during initialization at a time before transmission of C-REVERB.

29. The method of Claim 13, wherein said first transceiver adjusts its power level before transmission of C-REVERB.

30. The apparatus of Claim 26, wherein said ATU-C adjusts its power level during initialization at a time before transmission of C-REVERB.

31. A method of reducing power required for transmitting a signal from a first transceiver to a second transceiver, comprising the acts of:

estimating an excess amount of power used by said first transceiver for transmitting said signal, wherein said excess amount of power for said signal is estimated in accordance with a measured value of upstream attenuation;

reducing a power use of said first transceiver by said excess amount of power to a reduced power level; and

transmitting said signal from said first transceiver using said reduced power level, wherein said reduced power level achieves a transmission rate of said signal within a predefined tolerance of a target rate thereof.

## IX. EVIDENCE APPENDIX

None.

## X. RELATED PROCEEDINGS APPENDIX

None.